

Claims

What is claimed is:

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1. A method for generating a transform, comprising:

a) selecting a generator polynomial;

10 b) generating a plurality of lookup tables using the generator polynomial;

c) receiving a data string;

d) dividing the data string into a plurality of data portions, one for each of the plurality of lookup tables;

15 e) performing a lookup in each of the plurality of lookup tables to find a plurality of partial transforms based on the plurality of data portions; and

f) creating a transform based on the plurality of partial transforms.

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2. The method of claim 1, wherein step (b) further includes the steps of:

b1) selecting a range of numbers;

5 b2) moving the range of numbers by a number of bits equal to a number of bits in the transform to form a shifted range of numbers;

10 b3) dividing the shifted range of numbers modulo n by the generator polynomial to form a plurality of entries for one of the plurality of lookup tables.

3. The method of claim 2, wherein step (b1) further includes the step of selecting a byte of numbers.

15 4. The method of claim 2, wherein step (b3) further includes the step of dividing modulo two.

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5. The method of claim 1, further including the steps of:

g) when the data string is longer than an input to the plurality of lookup tables, selecting a second plurality of data portions of the data string;

h) exclusive ORing each of the second plurality of data portions by a portion of the transform to form a plurality of pointers;

i) performing a lookup in each of the plurality of tables using the plurality of pointers to find a second plurality of partial transforms.

6. The method of claim 5, further including the steps of:

j) multiplying the transform by a factor to form a moved transform;

k) exclusive ORing the moved transform and the second plurality of partial transforms to form a new transform.

7. A system for generating a transform, comprising:

a first transform lookup table;

a second transform lookup table; and

a transform exclusive OR array connected to an output of the first transform lookup table and an output of the second transform lookup table.

8. The system of claim 7, further including a first data exclusive OR array connected to a first data portion of the input data and connected to a first transform portion of an output of the transform exclusive OR array and an output forming a pointer to the first transform table.

9. The system of claim 8, further including a second data exclusive OR array connected to a second data portion of the input data and connected to a second transform portion of the output of the transform exclusive OR array and an output forming a pointer to the second transform table.

10. The system of claim 9, wherein a number of bits in the first data portion is equal to a number of bits in the first transform portion.

11. The system of claim 10, wherein a number of bits in the second data portion is equal to the number of bits in the first data portion.

12. The system of claim 11, further including a third transform lookup table connected to the transform exclusive OR array.

13. The system of claim 12, further including a third data
exclusive OR array connected to a third data portion of the input data
and connected to a third transform portion of the output of the
transform exclusive OR array and an output forming a pointer to the
third transform table.

14. A system for generating a transform comprising:

a first lookup table connected to a new portion of a data string;
an exclusive OR array having an input connected to an output
of the first lookup table; and
a second lookup table connected to a discarded portion of the
data string.

15. The system of claim 14, wherein the new portion and the
discarded portion have the same length.

16. The system of claim 14, wherein the exclusive OR array is
a three term exclusive OR array.

17. The system of claim 14, further including a data exclusive
OR having an output connected to an input of the first lookup table
and a first input connected the new portion of the data string and a
second input connected to a portion of a present transform.

18. The system of claim 14, further including a shift register connected between a data input stream and the second lookup table.

19. The system of claim 14, further including an output
5 register connected to the output of the exclusive OR array.

20. The system of claim 19, wherein a content of the output register is shifted by a predetermined number of bits and then input into the exclusive OR array.

21. The system of claim 14, wherein the first lookup table is
10 a plurality of tables.

22. The system of claim 21, wherein the second lookup table
15 is a plurality of tables.